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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/750,557

12/31/2003

Allen W. Bettner

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EXAMINER

A, MINH D

ART UNIT

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2821

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/750,557	<b>Applicant(s)</b> BETTNER ET AL.	
	<b>Examiner</b> MINH D. A	<b>Art Unit</b> 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-23, 29-31 and 34-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-23, 29-31, 34-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***DETAILED ACTION***

This is a response to the Applicant's amendment submitted on 04/01/08. In virtue of this amendment, claims 18-23, 29-31, 34-48 are currently presented in the instant application.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 18-23, 29-31, 34-48 are rejected under 35 U.S.C. 102(b) as being unpatentable by Flint et al (Patent No. U.S: 6,339,400).

Regarding claim 18, Flint discloses, in figures 2-4, 6 and 13, a display device having a skin(RF foil)(140) of a computing device (see figure 13), the skin (140) comprising a conductive material; and a slot(130, 131)in the skin(140), a first directional element ((element 135 as shown in figure 13) defined as such because it defines the polarization field direction across the slot (131)) coupled to the first slot(131) beneath the skin (140),( for example in figure 6, the antenna (61) and antenna (62) have a different directional radiation pattern), a slot(130, 133)in the skin (140), said slot comprising a slot antenna (133, 132),wherein the slot antenna(132-133) inherently comprises a sector slot antenna having a directional radiation pattern (for example in figure 6, the antenna (61) and antenna (62) have a different directional radiation pattern), wherein the sector slot antenna comprises a first sector slot antenna in a

Art Unit: 2821

sector antenna system, said sector antenna system further comprising: a second sector slot antenna in the skin(140, said second sector slot antenna having a directional radiation pattern in a different direction than the first sector slot antenna. Col.3, lines 24-67 to col.4, lines 1-41.

Regarding claim 19, Flint discloses a plurality of additional sector slot antennas in the skin, each of the plurality of additional sector slot antennas having a directional radiation pattern covering a different sector surrounding the computing device. See figures 3-4, 6-7.

Regarding claim 20, Flint discloses wherein the first sector slot antenna has the directional radiation pattern for multiple resonant frequency bands. Figures 3-4 and 13, col. 3, lines 15-63.

Regarding claim 23, Flint discloses, in figures 3-4 and 7, a third sector slot antenna having a same directional radiation pattern as the first sector slot antenna, said first sector slot antenna and said third sector slot antenna comprising a diversity antenna.

Regarding claim 29, Flint discloses, in figures 2-4 and 13, a display device having a skin(RF foil)(140) of a computing device (see figure 13), the skin (140) comprising a conductive material; and a slot(130, 131)in the skin(140), a slot(130, 133)in the skin (140), said slot comprising a slot antenna (133, 132), wherein the slot antenna(132-133) inherently comprises a sector slot antenna having a directional radiation pattern, wherein the sector slot antenna comprises a first sector slot antenna in a sector antenna system, said sector antenna system further comprising: a second

Art Unit: 2821

sector slot antenna in the skin(140, said second sector slot antenna having a directional radiation pattern in a different direction than the first sector slot antenna. Col.3, lines 24-67 to col.4, lines 1-41.

Regarding claim 30, Flint discloses the sector antenna system further comprising: a plurality of additional sector slot antennas in the skin, each of the plurality of additional sector slot antennas having a directional radiation pattern covering a different sector surrounding the notebook computer. Figures 3-4 and 13.

Regarding claim 31, Flint discloses, figure 2, a third sector slot antenna having a same directional radiation pattern as the first sector slot antenna, said first sector slot antenna and said third sector slot antenna comprising a diversity antenna.

Regarding claim 34, Flint discloses figures 3-4 and 7, wherein the conductive material comprises an outer layer of the skin in at least a vicinity of the slot of the first sector slot antenna.

Regarding claim 36, Flint discloses, figures 3-4 and 7, wherein the slot of the first sector slot antenna extends through only the outer layer.

Regarding claim 38, Flint discloses figures 3-4 and 7, wherein the skin is made entirely of the conductive material.

Regarding claim 39, Flint discloses, figures 3-4 and 7, the computing device comprises one of a notebook computer, a tablet computer, and a handheld computer.

Regarding claim 40, Flint discloses, figures 3-4 and 7, wherein the computing device comprises at least one of a base and a lid, and wherein the slot of the

Art Unit: 2821

first sector slot antenna is located in at least one of an edge of the base, an edge of the lid, an outside of the lid, an inside of the lid, through the lid, and through the base.

Regarding claim 41, Flint discloses, figures 3-4 and 7, the first sector slot antenna comprising a cavity behind the slot, said cavity having a depth of approximately one-quarter of a wavelength of a resonant frequency of the first sector slot antenna.

Regarding claim 42, Flint discloses figures 3-4 and 7, the first sector slot antenna comprising an impedance plane coupled to the skin under the slot of the first sector slot antenna.

Regarding claim 43, Flint discloses figures 3-4 and 7, wherein the impedance plane comprises an Artificial Magnetic Conductor (AMC).

Regarding claim 44, Flint discloses, figures 3-4 and 7, wherein the impedance plane comprises a multiple band impedance plane, said multiple band impedance plane to act as a magnetic conductor for a primary resonant frequency and a secondary resonant frequency of the slot.

Regarding claim 45, Flint discloses figures 3-4 and 7, wherein the first sector slot antenna has a primary resonant frequency and a secondary resonant frequency.

Regarding claim 46, Flint discloses figures 3-4 and 7, wherein the primary resonant frequency and the secondary resonant frequency are tuned for two different wireless communications standards.

Art Unit: 2821

Regarding claim 47, Flint discloses, figures 3-4 and 7, wherein the two - wireless communications standards comprise at least one of Bluetooth, 802.11a, 802.11b, and 802.11g.

Regarding claim 48, Flint discloses, figures 3-4 and 7, wherein at least one of a thickness of the skin in a vicinity of the slot, a width of the slot, a length of the slot, and a tuning element at a feed point of the slot are tuned to achieve at least one of a target impedance and a primary resonant frequency of the slot.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Flint et al (Patent No. U.S: 6,339,400) in view of Stuckey, Jr, et al (U.S Patent No: 4,451, 829).

Regarding claims 21-22, Flint discloses every feature of the claimed invention except a tuning element and the tuning element comprises a stub capacitor.

Stuckey, Jr, et al discloses the tuning element and the tuning element is stub capacitor(the antenna slot (26) having a capacitor (27) and the matching stub (28). Col.3, lines 30-31 and 38-41.

It would have been obvious to one having ordinary skill in the art to employ the tuning element and the tuning element being the stub capacitor as disclosed in the slot

Art Unit: 2821

antenna of Stuckey, Jr, et al in the laptop of Flint et al to achieve the claimed invention.

As disclosed in the slot antenna of Stuckey, Jr, et al , the motivation for the combination would be to obtain the high impedance and high frequency for slot antenna.

4. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Flint et al (Patent No. U.S: 6,339,400) in view of Merz et al (U.S Patent No: 6,413,103).

Regarding claim 35, Flint discloses figures 3-4 and 7, wherein the outer layer comprises one of a conductive coating.

Flint does not teach a conductive mesh.

Merx et al disclose in figure 5, a conductive mesh wires as shown in col.8, line 38.

It would have been obvious to one having ordinary skill in the art to employ the conductor mesh as disclosed in the portable computing device of Mez et al in the laptop of Flint et al to achieve the claimed invention. As disclosed in the portable computing device of Mez et al, the motivation for the combination would be to improve the performance of other devices in the cable.

5. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Flint et al (Patent No. U.S: 6,339,400) in view of Lo et al (U.S Patent No: 6,452,549).

Regarding claim 37, Flint discloses figures 3-4 and 7, wherein the slot of the first sector slot antenna.

Flint does not teach that, the slot antenna extends through multiple layers of the skin.



Lo et al disclose in figure 4 that, a multiple layer planar structure having multiple layers, for example (400, 420, 440). Col.6, lines 38-47.

It would have been obvious to one having ordinary skill in the art to employ the multiple layer as disclosed in the antenna of Lo in the laptop of Flint et al to achieve the claimed invention. As disclosed in the antenna of Lo, the motivation for the combination would be to improve the high performance of the antenna.

### ***Response to Arguments***

6. Applicant's arguments filed on 4/01/08 have been fully considered but they are not persuasive.

Regarding independent claims 18 and 29, applicant argues that, the prior art (Flint et al (U.S Patent No: 6,339,400B1) do not disclose " a first directional element coupled to the first slot beneath the skin and a second directional element coupled to the second slot beneath the skin and the first section slot antenna and the second sector slot antenna together comprising a sector antenna system" as shown on Remarks, page 11, lines 1-11, examiner respectfully disagrees . As set forth in the office action on 11/01/07, the reference (Flint et al) disclose in figures 2-4, 6 and 13, a display device having a skin(RF foil)(140) of a computing device (see figure 13), the skin (140) comprising a conductive material; and a slot(130, 131)in the skin(140), a slot(130, 133)in the skin (140), said slot comprising a slot antenna (132, 133), wherein the slot antenna(132-133) inherently comprises a sector slot antenna having a directional radiation pattern (for example in figure 6, the antenna (61)

Art Unit: 2821

and antenna (62) have a different directional radiation pattern), wherein the sector slot antenna comprises a first sector slot antenna in a sector antenna system, said sector antenna system further comprising: a second sector slot antenna in the skin(140, said second sector slot antenna having a directional radiation pattern in a different direction than the first sector slot antenna. Col.3, lines 24-67 to col.4, lines 1-41.

Flint et al also disclose in figures 6 and 13 that, a first directional element ((element 135 as shown in figure 13) defined as such because it defines the polarization field direction across the slot (131)) coupled to the first slot(131) beneath the skin (140) and a second directional element ((137) defined as such since it also defines the polarization field direction across the slot (133) ) coupled to the second slot beneath the skin (140) and the first section slot antenna( 61) and the second sector slot antenna (62) together comprising a sector antenna system( figure 6). For the reason, claims 18 and 29 are not distinguish over the prior art.

### ***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dieu A whose telephone number is (571) 272-1817. The examiner can normally be reached on M-F (5:30 AM-2: 45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Owens Douglas W can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2821

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner Minh A

Art Unit 2821

Date 7/03/08

/Douglas W Owens/  
Supervisory Patent Examiner, Art Unit 2821  
July 25, 2008